ABSTRACT

An ocular implant is provided with a substrate and a membranous tissue layer secured to the substrate. Cells such as IPE cells, RPE cells and stem cells are attached on the surface of the membranous tissue layer either *in situ* or *in vivo* through cells transplantation. The cells are separated into regions on the surface by creating a pattern on the surface enclosing regions for receiving the cells. The substrate is a bioabsorbable and/or polymeric substrate. Examples of membranous tissue layer are lens capsule, inner limiting membrane, corneal tissue, Bruch's membrane tissue, amniotic membrane tissue, serosal membrane tissue, mucosal membrane tissue and neurological tissue. The membranous tissue layer could have a micropattern of biomolecules. A microfluidic network could be placed onto the microfabricated membranous tissue layer.